Annual Project Summary

Paleoseismic Investigation of the Simi fault, Ventura County, California

Program Element: I and II
Key words: Regional Seismic Hazards, paleoseismic, fault trench

U.S. Geological Survey
National Hazard Reduction Program

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NON-TECHNICAL SUMMARY

Results from our earlier investigation at Arroyo Simi within Simi Valley demonstrate that the Simi fault is active, constrain the timing of the most recent earthquake, and provide data on the sense of slip of the Simi fault. Our ongoing research seeks to further refine how many earthquakes have occurred on the fault within the last 10,000 years and determine slip rate on the Simi fault in Simi Valley

INVESTIGATIONS UNDERTAKEN

Our initial paleoseismic investigation funded by the Southern California Earthquake Center (SCEC) at the Arroyo Simi site constrained the timing of the most recent event on the Simi fault between 7666±50 years BP, the age of faulted ponded clay deposits, and 1205±80 years BP, the age of overlying unfaulted colluvium (Figures 1 and 2; Hitchcock et al, 1998). Results of the ongoing study will provide additional constraints on the number and timing of Holocene earthquakes. Proposed fault trenches will enable us to

document a more complete event chronology. Geologic relations at the Arroyo Simi site provide an opportunity to constrain the timing and recurrence of late Holocene surface-rupture earthquakes, as well as the late Holocene slip rate, which will provide direct input to earthquake forecasting efforts and seismic hazard planning, from local community planning to regional evaluation of earthquake hazards.

Because the property that we wish to trench has been in escrow, the current owner has asked that we wait until the sale is final before we begin our trenching. Unfortunately, the process has taken longer than all parties had anticipated. We are currently waiting for the final approval and anticipate trenching at the Arroyo Simi site in January 2000.

TECHNICAL AND NON-TECHNICAL REPORTING

The target audiences for data derived from this study are the planning and government agencies responsible for earthquake hazards reduction and risk mitigation in the greater Los Angeles Metropolitan area. In addition to generating technical and non-technical reports required by the award contract, we anticipate producing a digital database of archival information and a series of digital maps. To ensure that the scientific community will have the opportunity to provide input into our research efforts, we will share our data directly with the U.S. Geological Survey, the California Division of Mines and Geology, and interested university researchers and private consultants.

The final maps produced by this study will be supplemented by technical and non-technical reports that provide documentation of the sources of information, methods of data collection and analysis, and recommendations for use and application of the maps. We anticipate conducting formal and/or informal presentations with local municipalities (e.g., Ventura County, City of Simi Valley, and at USGS-sponsored or other workshops relevant to earthquake hazards). Lastly, we anticipate producing a refereed journal article and presenting the results at a major professional society meeting.

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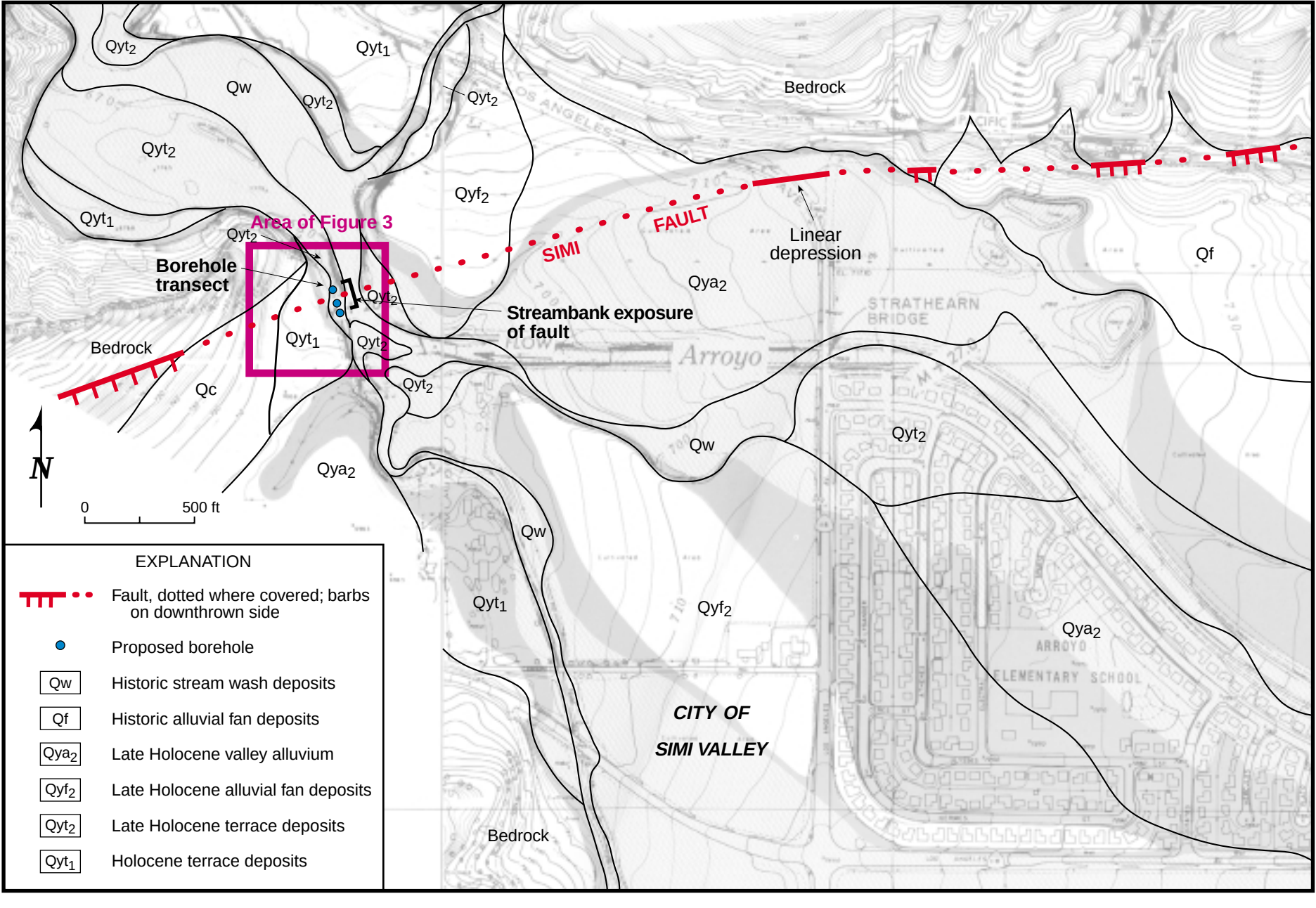

Figure 1. Map of surficial deposits and the Simi fault in the northwestern Simi Valley showing the proposed Arroyo Simi Study Area. Topographic base map from the Ventura County Flood Control District, date of topography is 1967.

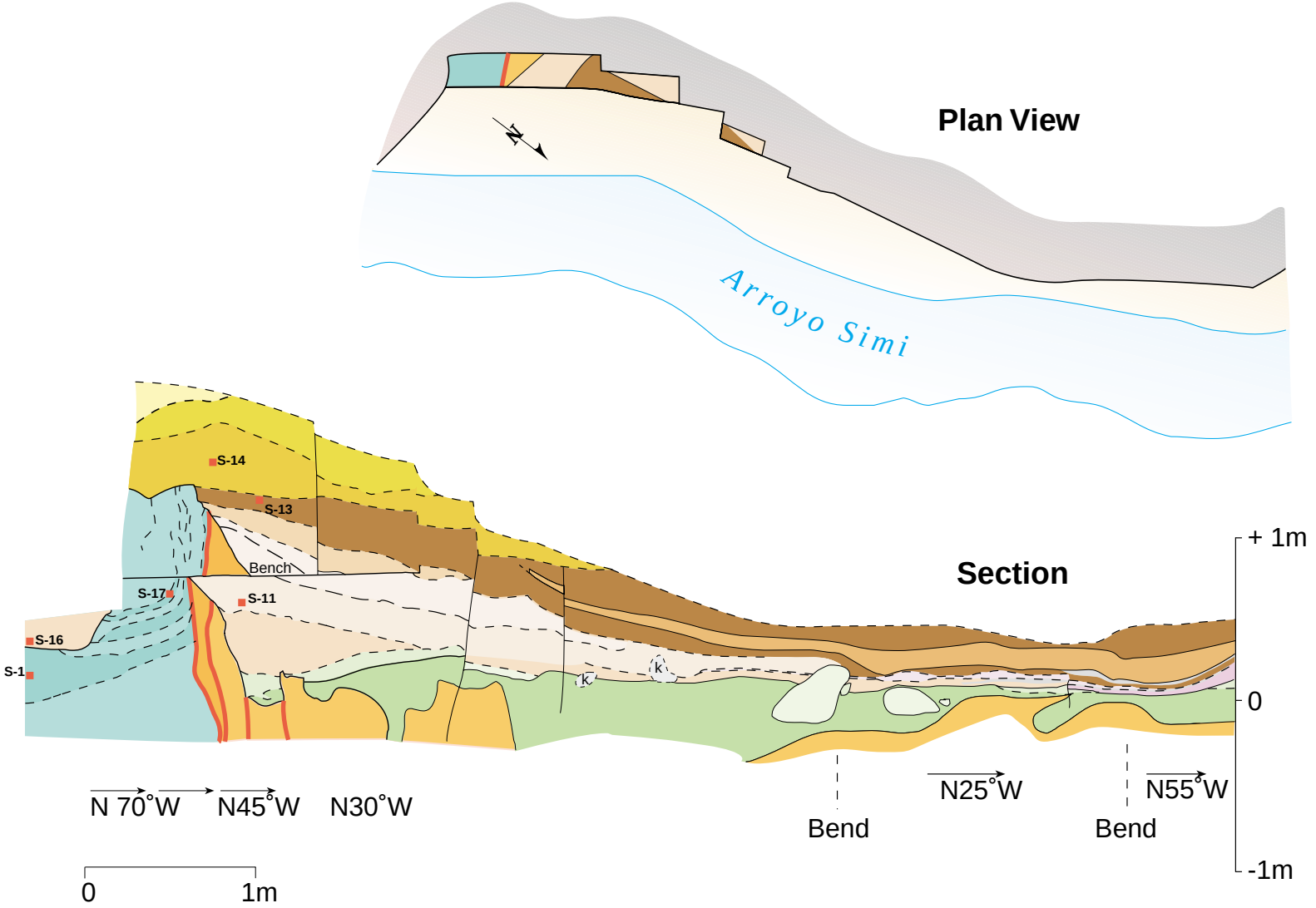

Figure 2. Plan view and section view of the original Arroyo Simi fault exposure.